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Progress of Auxiliary Systems for Linear IFMIF Prototype Accelerator (IFMIF)

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Progress of Auxiliary Systems for Linear IFMIF Prototype Accelerator (LIPAc)
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The International Fusion Material Irradiation Facility (IFMIF) aims at qualifying and characterising materials capable to withstand the intense neutron flux originated in the D-T reactions of future fusion reactors thanks to a neutron flux with a broad peak at 14 MeV capable to provide >20 dpa/fpy on small specimens also qualified in this Engineering Validation Engineering Design Activity (EVEDA) phase. All its broad mandate has been successfully achieved, the only pending, is the validation of its Linea IFMIF Prototype Accelerator (LIPAc) with its Auxiliary Systems.
The validation of LIPAc will be achieved in this on-going phase until December 2019 with the operation of a deuteron accelerator at 125 mA CW mode and 9 MeV, which is presently under installation and commissioning in Rokkasho (Japan). The successful operation of such a challenging plant, demands careful assessment of its auxiliary systems, that holding adequate redundancies will allow the target plant availability. The target availability of LIPAc was considered top priority even due to the inherent administrative difficulties of an "in-kind"project.
LIPAc, the Linear IFMIF Prototype Accelerator presents a broad spectrum of ancillary equipment to optimize its operational beam time.
A description of the Nuclear HVAC of IFMIF has already been reported [1].
The present paper describes the auxiliary systems of LIPAc, (and their construction status) among which we address the Cryoplant System (Cryo), the Heating Ventilation & Air Conditioning (HVAC), Electrical Power Supply (EPS), the Service Water System (SWS), the Service Gas System (SGS), the Heat Rejection System (HRS) and the Fire Protection System (FPS).
[1] G. Pruneri et al., Design principles of a nuclear and industrial HVAC of IFMIF, Fusion Engineering and Design 103 (2016) 81–84

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